ADDING the LARKEN RAMDISK to existing LKDOS SYSTEM

The Ramdisk system consists of a rear memory board and a new Lkdos eprom. The memory board features automatic write protect and powerup/dowm protection. Also on the board is a manual write protect switch for additional data protection when the board is removed from the computer. How ever i have found that the manual write protect switch isn't really necessary.

The board is mapped into the upper 32K of the Dock bank. It has a select port on board that can select between any of the 8 Ramchips. It is compatible with Spectrum and OS-64 but will conflict with Aros cartridges and the FD-68 ram.

The board will hold memory from 32k to 256k. It uses the new 32K x 8 static rams : Part# 43256L or 62256-LP They can come in various speeds but even the slowest available are plenty fast for the 2068 , so buy the slowest (also the cheapest).

These can be obtained in the US from suppliers such as

- MICROPROCESSORS UNLIMITED
  24000 S. PEORIA AVE.
  BEGGS OK.
  74421 USA PHONE -918-267-4961

(Dont Get 71256 chips)

- JDR Microdevices
  110 Knowles Drive,.
  Los Gatos, CA
  95030 PHONE 408 866 6200

- I.C. EXPRESS
  15358 VALLEY BOULEVARD
  CITY OF INDUSTRY ,CALIFORNIA
  91746 PHONE 818 369 2688 OR 800 892 8889

- In Canada, Active Components has them but they can cost you quite a bit more.

All the US companies sell the 43256 or 62256 for $11 to $15. Check COMPUTER SHOPPER MAGAZINE for other companies.

CAUTION - These chips are CMOS chips and can be damaged by static electricity. (They are also very expensive)

To install the ram chips,remove the board from the 2068 and remove the batterys from the board and carefully install the chip(s) begining in socket 1 (the one closest to the battery holder). Make sure the notched end of the chip is at the top of the board. You may need to bend the pins in on new chips so they will fit into the socket. Do this by holding the chip on its side on a flat surface such as a tabletop and then carefully bending all the pins at once by rolling the chip sideways slightly.

For most users, 4 chips or 128K should be sufficent for ramdisk memory. This will give good battery life and no soldering is required for installation. A ramdisk is mainly for speeding up running of programs that have a lot of disk access and not really for mass data storage (Thats for Floppys).

- Installing past 128K-

The first 4 chips (1st 128K) plug into the sockets, but adding chips past 128K will require you to solder sockets on top of the first (socketed) chips to hold the second (high) bank . This should be done only by a someone experenced in soldering and with a grounded soldering iron designed for soldering CMOS chips.

Adding the second bank of 128K on top of the first will require you to solder all the pins of the stacked socket to the socketed chip exept pin 20. You must bend out pin 20 a bit and connect this pin to the unused drilled hole in the board near pin 28 on the chip with a small wire. This is the Chip select for the stacked Chip. They are labeled E,F,G,H from the underside of the board. You will notice that the first bank is connected to enable A,B,C,D.

Remove the lower chip from the ramdisk while soldering the socket on top of it. Remove all solder flux afterward.

Add 1 chip at a time and then check it by Formating and Verifying it.

-Batterys

The ramdisk will accept 2 AAA batterys. These keep the data from being lost when the 2068 is turned off or the board is removed from the 2068. Batterys can be changed while the 2068 is turned on so that data is not lost . Battery life should be at least a few months. The more ram chips you have, the shorter battery life will be.

-Never wrap the board in foil when the Batterys are installed.

-Never remove the board from the 2068 while the 2068 is on.

SOFTWARE

All software that will run on the floppy will run on ramdisk, so it can be used with most existing software. It is great for storing programs and data that are used alot because of its speed and for temperary data that you dont want to save to floppy yet. It is also good for BBS's Graphic programs, fast screen$ loading etc.

Supplied with the ramdisk is a new Eprom for your LKdos cartridge. (Please return your old Eprom to LARKEN). The new Eprom contains the support code for the ramdisk. Now if you type. Print#4: GOTO 4 you will have selected the Ramdisk as you current disk drive. All disk commands will run on the ramdisk the same as floppy exept faster.

Before saving data to the Ramdisk you must Format it. Do this by first selecting the ramdisk with GOTO 4 then type-

```
Print #4: FORMAT "n",     - n = number of ram chips installed
```

Make sure the write protect switch is up or you will get a Protect Error.

You can now use all disk commands like Load save merge cat etc.

The Print#4 : Verify "" command is usefull to see if the data in the ram disk is good. The ramdisk uses a sumchech for each block to check for errors (though errors are rare).

-LKDOS V2 Eprom

The new Eprom (version 2 or greater) has a few differences from the V1 Eprom. It has a faster powerup routine and also if you press 'J' while turning on the 2068 you will select the Ramdisk.(same as typing GOTO 4). So pressing "j" and Enter will run a AUTOSTART on the ramdisk. It also has a the command 'NEW' that restarts the Dos and lets you rerun an Autostart program from the currently selected drive.

The proportional Character set for the windows that was in the V1 Eprom had to be Removed to make room for the Ramdisk Routines. So you will find that the standard 2068 Charset is set up for the windows. However you can load the narrow Charset in to memory and PRINT#4 :POKE 8219,Chars-256 to set the window chars pointer to the new chars set.

Also the V2 eprom has a few 'bugs' corrected that had to do with loading screens and speeding up some code.

RamDisk Tech Info and Installing an Aros Program

The ramdisk uses the upper 32K area of the Dock (or cartridge) bank. The ramdisk has an onboard bank select port that can select which of the 8-32K ram chips that will appear in the upper 32K of the dock bank. Port 7 is used for this. The lower 3 bits select which chip is selected and bit 6 is used for write-protecting the Ram when Lkdos isnt using it.

The chip which is selected by the adress of the lower 3 bits is described in the following table.

Port 7 addr	7	3	5	1	6	2	4	0
chip select	A	B	C	D	E	F	G	H

On powerup port 7 always holds 0 so chip H is selected. also the dos always leaves chip H selected after is uses the Ramdisk

This means that if an Aros program were installed into chip H then it autostart and run as a Timex Cartridge.

You dont need a full 256K installed to be able to use this on chip H, just change the chip select on socket 4 to run to chip select H instead of chip select D.

This program can be used to load a Aros Program into Chip H.

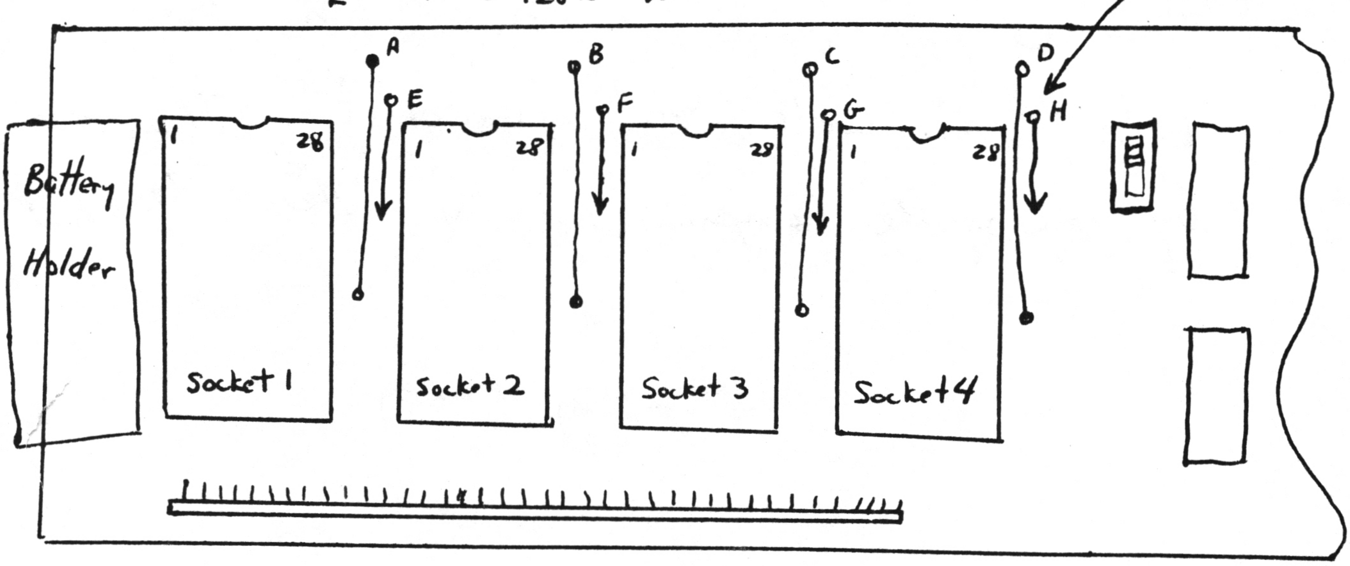
```
OUT 7,64     (out 7,0 +bit 6 set for no write protect)
OUT 244,240  (Enable  upper 32K of dock bank)
Load "Aros" Code 32768,length
OUT 7,0      (write protect)
OUT 244,0    (turn off dock  bank)
(NEW)  will start an autostart cartridge.
```

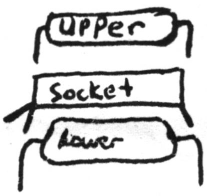
In the Timex tech manual is information on how to put a basic program on a cartridge. Most timex command cartridges and Hot Z Aros will also work fine in this setup.

You can still use the Ramdisk on the other chips and have a Aros cartridge installed too , just be sure not to format the more than 7 chips.

A - D = 0-128K
E - H = 128K - 256K

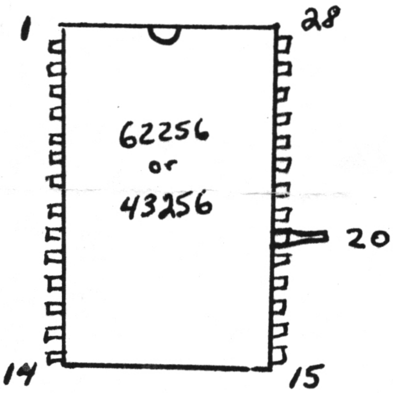
The 'H' 32K Bank Can be used as an ARos Bank



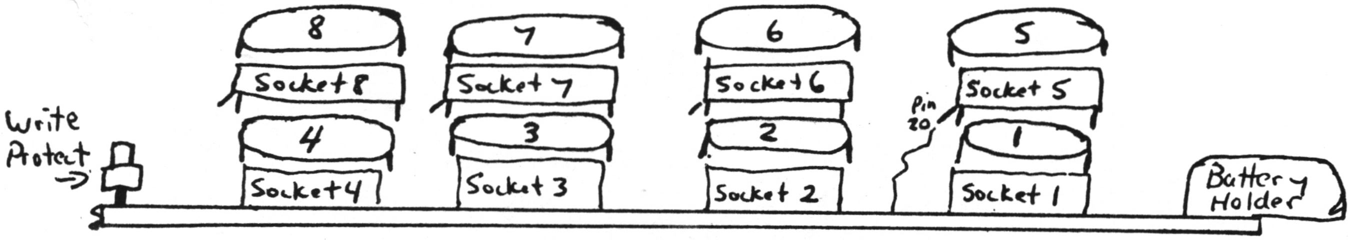


Plug upper chip into socket.

Solder 28 Pin Socket on top of lower chip with pin 20 Bent out.



Top View with Stacked Bank (Showing Order)



Donald

I have found out that Chips marked 71256 Dont work well in the Ram disk. They are sold by one of the Companies on the other side of Page

Lary Keny